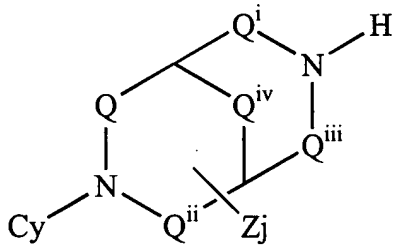
Amendments to the Claims

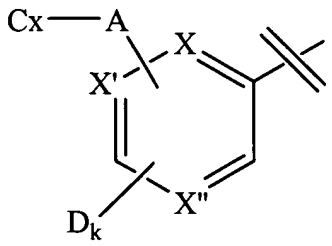
This listing of claims will replace all prior versions, and listings, of claims in the application.

In the Claims

1. (Currently Amended) A compound of the formula:



wherein Q is $(CH_2)_u$, Q^i is $(CH_2)_v$, Q^{ii} is $(CH_2)_w$, Q^{iii} is $(CH_2)_x$, and Q^{iv} is $(CH_2)_y$, where u, v, w and x are individually 0, 1, 2, 3 or 4 and y is 1 ; wherein u, v, w and x are selected such that the ring is a diazabicyclo[3.3.1]nonane; Z is a substituent species G; j is from 0 to 10; ~~R is hydrogen or C_{1-8} alkyl~~; and Cy is



where each of X, X' and X" are individually nitrogen, nitrogen bonded to oxygen or carbon bonded to a substituent species G; A is O or C=O; D is a substituent species G; k is 0, 1 or 2; and Cx is selected from a group consisting of aryl, substituted aryl, heteroaryl, substituted heteroaryl, non-aromatic heterocyclyl, substituted non-aromatic heterocyclyl, non-aromatic heterocyclylalkyl and substituted non-aromatic heterocyclylalkyl, wherein G is selected from the group consisting of alkyl, substituted alkyl, alkenyl, substituted alkenyl, non-aromatic heterocyclyl, substituted non-aromatic heterocyclyl, aryl, substituted aryl, heteroaryl, substituted

heteroaryl, alkylaryl, substituted alkylaryl, arylalkyl, substituted arylalkyl, -F, -Cl, -Br, -I, -OR', -NR'R", $-CF_3$, -CN, $-N_3$, $-NO_2$, $-C_2R'$, -SR', -SOR', $-SO_2CH_3$, $-SO_2NR'R"$, -C(=O)NR'R", -NR'C(=O)R", $NR'SO_2R"$, -C(=O)R', -C(=O)OR', $-(CH_2)qOR'$, -OC(=O)R', $-(CR'R")_qOCH_2C_2R'$, ~~-(CR'R)qC(=O)R';~~ -(CR'R")qC(=O)R', $-O(CR'R")_qC(=O)R'$, $-C_2(CR'R")_qOR'$, ~~-(CR'R)$_q$NR'R,~~ $-(CR'R")_qNR'R"$, ~~-OC(=O)NR'R,~~ -OC(=O)NR'R", and -NR'C(=O)OR' where R' and ~~R~~ R" are individually hydrogen, C_{1-8} alkyl, an aromatic group-containing species or a substituted aromatic group-containing species, wherein the substituent is G and the aromatic group containing species is phenyl, biphenyl, naphthyl, pyridinyl, pyrimidinyl, quinolinyl, or indolyl, and

q is an integer from 1 to 6,

wherein heterocyclyl groups are ~~saturated or unsaturated cyclic radicals containing one or more heteroatoms selected from the group consisting of O, N, and S as part of the ring structure and having two to seven carbon atoms in the ring~~ selected from the group consisting of tetrahydrofuranyl, tetrahydropyranyl, tetrahydrothienyl, tetrahydrothiopyranyl, pyrrolidinyl, and piperidinyl, and

wherein substituted alkyl, substituted alkenyl, substituted non-aromatic heterocyclyl, substituted aryl, substituted heteroaryl, substituted alkylaryl, and substituted arylalkyl groups are alkyl, alkenyl, non-aromatic heterocyclyl, aryl, heteroaryl, alkylaryl, and arylalkyl groups groups further bearing one or more substituent species G.

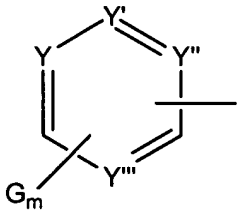
2. (Original) The compound of Claim 1, wherein X" is nitrogen.

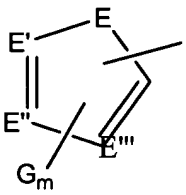
3. (Original) The compound of Claim 1, wherein X' and X" are nitrogen.

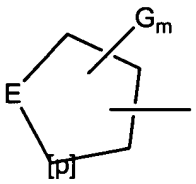
4. (Original) The compound of Claim 1, wherein j is 0, 1 or 2.

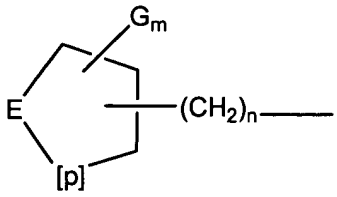
Claim 5. (Cancelled)

6. (Previously Presented) The compound of Claim 1, wherein Cx is selected from the group consisting of









wherein Y, Y', Y" and Y''' are individually nitrogen, nitrogen bonded to oxygen, or carbon bonded to hydrogen or a substituent species, G; E is oxygen, sulfur or nitrogen bonded to hydrogen or a substituent species, G; E', E", and E''' are individually nitrogen or carbon bonded to hydrogen or a substituent species, G; m is 0, 1, 2, 3 or 4; p is 0, 1, 2 or 3; n is 0, 1, 2, 3 or 4; and

G is selected from the group consisting of alkyl, substituted alkyl, alkenyl, substituted alkenyl, non-aromatic heterocyclyl, substituted non-aromatic heterocyclyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkylaryl, substituted alkylaryl, arylalkyl, substituted arylalkyl, -F, -Cl, -Br, -I, -OR', -NR'R", -CF_3, -CN, -N_3, -NO_2, -C_2R', -SR', -SOR', -SO_2 CH_3, -SO_2 NR'R", -

C(=O)NR'R", -NR'C(=O)R", -NR'SO_2R", -C(=O)R', -C(=O)OR', -(CH_2)qOR', -OC(=O)R', -$(CR'R")_qOCH_2C_2R'$, -(CR'R")qC(=O)R', -O(CR'R")$_q$C(=O)R', -C_2(CR'R")$_q$OR', -(CR'R")$_q$NR'R", -OC(=O)NR'R", and -NR'C(=O)OR' where R' and R" are individually hydrogen, C_{1-8} alkyl, an aromatic group-containing species or a substituted aromatic group-containing species,

wherein the aromatic group-containing species and substituted aromatic group-containing species are as defined in claim 1.

7. (Previously Presented) The compound of Claim 6, wherein Y, Y', Y" and Y"' all are carbon bonded to a substituent species G.

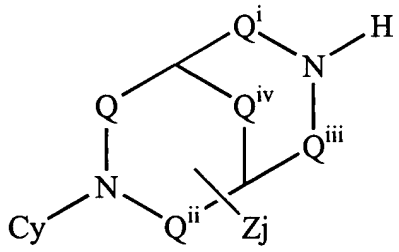
8. (Previously Presented) The compound of Claim 6, wherein one or two of Y, Y', Y" and Y"' are nitrogen and the remaining are carbon bonded to a substituent species G.

9. (Currently Amended) The compound of Claim 6, wherein E', E" and E"' all are carbon bonded to substituent species G.

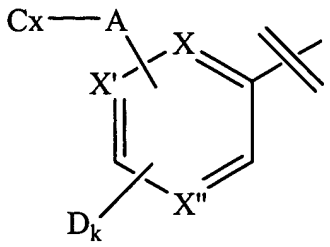
10. (Previously Presented) The compound of Claim 6, wherein one or two of E', E" and E"' are nitrogen and the remaining are carbon bonded to substituent species G.

Claim 11. (Cancelled)

12. (Currently Amended) A compound of the formula:



wherein Q is $(CH_2)_u$, Q^i is $(CH_2)_v$, Q^{ii} is $(CH_2)_w$, Q^{iii} is $(CH_2)_x$, and Q^{iv} is $(CH_2)_y$, where u, v, w and x are individually 0, 1, 2, 3 or 4 and y is 1 ; wherein u, v, w and x are selected such that the ring is a diazabicyclo[3.3.1]nonane; Z is a substituent species G; j is from 0 to 10; ~~R is hydrogen or C_{1-8} alkyl~~; and Cy is



where each of X, X' and X" are individually nitrogen, nitrogen bonded to oxygen or carbon bonded to a substituent species G; A is a covalent bond; D is a substituent species G; k is 0, 1 or 2; Cx is selected from a group consisting of aryl, substituted aryl, heteroaryl, substituted heteroaryl, non-aromatic heterocyclyl, substituted non-aromatic heterocyclyl, non-aromatic heterocyclylalkyl and substituted non-aromatic heterocyclylalkyl;

G is selected from the group consisting of alkyl, substituted alkyl, alkenyl, substituted alkenyl, non-aromatic heterocyclyl, substituted non-aromatic heterocyclyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkylaryl, substituted alkylaryl, arylalkyl, substituted arylalkyl, -F, -Cl, -Br, -I, -OR', ~~-NR'R,~~ -NR'R", $-CF_3$, -CN, $-N_3$, $-NO_2$, $-C_2$-R', -SR', -SOR', $-SO_2CH_3$, ~~$-SO_2NR'R$~~, $-SO_2NR'R"$, -C(=O)NR'R", ~~-NR'C(=O)R,~~ -NR'C(=O)R", ~~$-NR'SO_2R$,~~ $NR'SO_2R"$, -C(=O)R', -C(=O)OR', $-(CH_2)qOR'$, -OC(=O)R', ~~$-(CR'R)_qOCH_2C_2R'$,~~ $-(CR'R")_qOCH_2C_2R'$, ~~$-(CR'R)qC(=O)R'$,~~ -(CR'R")qC(=O)R', ~~$-O(CR'R)_qC(=O)R'$,~~ $-O(CR'R")_qC(=O)R'$, $-C_2(CR'R")_qOR'$, ~~$-(CR'R)_qNR'R$,~~ $-(CR'R")_qNR'R"$, ~~-OC(=O)NR'R,~~ -OC(=O)NR'R", and -NR'C(=O)OR' where R' and R" are individually hydrogen, C_{1-8} alkyl, an aromatic group-containing species or a substituted aromatic group-containing species, wherein the substituent is G and the aromatic group containing species is phenyl, biphenyl, naphthyl, pyridinyl, pyrimidinyl, quinolinyl, or indolyl,

and q is an integer from 1 to 6,

wherein heterocyclyl groups are selected from the group consisting of tetrahydrofuranyl, tetrahydropyranyl, tetrahydrothienyl, tetrahydrothiopyranyl, pyrrolidinyl, and piperidinyl, and

wherein substituted alkyl, substituted alkenyl, substituted non-aromatic heterocyclyl, substituted aryl, substituted heteroaryl, substituted alkylaryl, and substituted arylalkyl groups are alkyl, alkenyl, non-aromatic heterocyclyl, aryl, heteroaryl, alkylaryl, and arylalkyl groups groups further bearing one or more substituent species G.

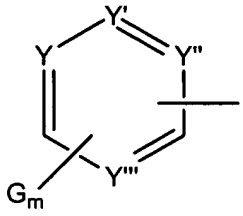
13. (Original) The compound of Claim 12, wherein X" is nitrogen.

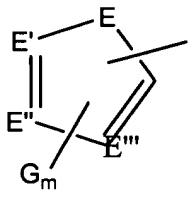
14. (Original) The compound of Claim 12, wherein X' and X" are nitrogen.

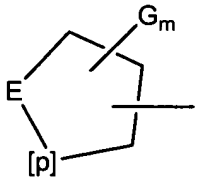
15. (Original) The compound of Claim 12, wherein j is 0, 1 or 2.

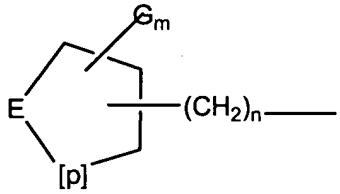
Claim 16. (Cancelled)

17. (Previously Presented) The compound of Claim 12, wherein Cx is selected from the group consisting of









wherein Y, Y', Y" and Y''' are individually nitrogen, nitrogen bonded to oxygen, or carbon bonded to hydrogen or a substituent species, G; E is oxygen, sulfur or nitrogen bonded to hydrogen or a substituent species, G; E', E", and E''' are individually nitrogen or carbon bonded to hydrogen or a substituent species, G; m is 0, 1, 2, 3 or 4; p is 0, 1, 2 or 3; n is 0, 1, 2, 3 or 4; and

G is selected from the group consisting of alkyl, substituted alkyl, alkenyl, substituted alkenyl, non-aromatic heterocyclyl, substituted non-aromatic heterocyclyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkylaryl, substituted alkylaryl, arylalkyl, substituted arylalkyl, -F, -Cl, -Br, -I, -OR', -NR'R", $-CF_3$, -CN, $-N_3$, $-NO_2$, $-C_2$-R', -SR', -SOR', $-SO_2$ CH_3, $-SO_2$ NR'R", -C(=O)NR'R", -NR'C(=O)R", $-NR'SO_2R"$, -C(=O)R', -C(=O)OR', $-(CH_2)qOR'$, -OC(=O)R', $-(CR'R")_qOCH_2C_2R'$, $-(CR'R")qC(=O)R'$, $-O(CR'R")_qC(=O)R'$, $-C_2(CR'R")_qOR'$, $-(CR'R")_qNR'R"$, -OC(=O)NR'R", and -NR'C(=O)OR' where R' and R" are individually hydrogen, C_{1-8} alkyl, an aromatic group-containing species or a substituted aromatic group-containing species, wherein aromatic group-containing species and substituted aromatic group-containing species are as defined in claim 12.

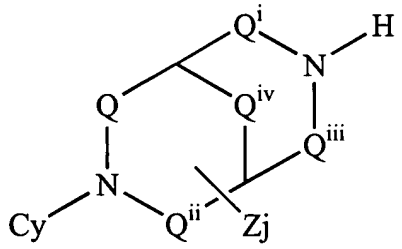
18. (Previously Presented) The compound of Claim 17, wherein Y, Y', Y" and Y"' all are carbon bonded to a substituent species G.

19. (Previously Presented) The compound of Claim 17, wherein one or two of Y, Y', Y" and Y"' are nitrogen and the remaining are carbon bonded to a substituent species G.

20. (Currently Amended) The compound of Claim 17, wherein E', E" and E"' all are carbon bonded to substituent species G.

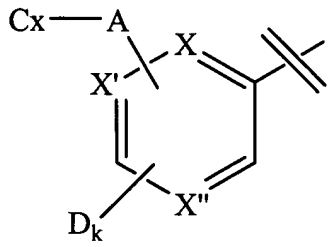
21. (Previously Presented) The compound of Claim 17, wherein one or two of E', E" and E"' are nitrogen and the remaining are carbon bonded to substituent species G.

22. (Currently Amended) A pharmaceutical composition useful for treatment of central nervous system disorders comprising a therapeutically effective amount of a compound of the formula:



wherein Q is $(CH_2)_u$, Q^i is $(CH_2)_v$, Q^{ii} is $(CH_2)_w$, Q^{iii} is $(CH_2)_x$, and Q^{iv} is $(CH_2)_y$, where u, v, w and x are individually 0, 1, 2, 3 or 4 and y is 1 or 2; wherein u, v, w and x are selected such

that the ring is a diazabicyclo[3.3.1]nonane; Z is a substituent species G; j is from 0 to 10; ~~R is hydrogen or C_{1-8} alkyl;~~ and Cy is



where each of X, X' and X" are individually nitrogen, nitrogen bonded to oxygen or carbon bonded to a substituent species G; A is O or C=O; D is a substituent species G; k is 0, 1 or 2; and Cx is selected from a group consisting of aryl, substituted aryl, heteroaryl, substituted heteroaryl, non-aromatic heterocyclyl, substituted non-aromatic heterocyclyl, non-aromatic heterocyclylalkyl and substituted non-aromatic heterocyclylalkyl,

wherein G is selected from the group consisting of alkyl, substituted alkyl, alkenyl, substituted alkenyl, non-aromatic heterocyclyl, substituted non-aromatic heterocyclyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkylaryl, substituted alkylaryl, arylalkyl, substituted arylalkyl, -F, -Cl, -Br, -I, -OR', ~~-NR'R,~~ -NR'R", $-CF_3$, -CN, $-N_3$, $-NO_2$, $-C_2$-R', -SR', -SOR', $-SO_2CH_3$, ~~$-SO_2NR'R$,~~ $-SO_2NR'R"$, -C(=O)NR'R", ~~-NR'C(=O)R,~~ -NR'C(=O)R", ~~$-NR'SO_2R$,~~ $NR'SO_2R"$, -C(=O)R', -C(=O)OR', $-(CH_2)qOR'$, -OC(=O)R', ~~$-(CR'R)_qOCH_2C_2R'$,~~ $-(CR'R")_qOCH_2C_2R'$, ~~$-(CR'R)qC(=O)R'$,~~ -(CR'R")qC(=O)R', ~~$-O(CR'R)_qC(=O)R'$,~~ $-O(CR'R")_qC(=O)R'$, $-C_2(CR'R")_qOR'$, ~~$-(CR'R)_qNR'R$,~~ $-(CR'R")_qNR'R"$, ~~-OC(=O)NR'R,~~ -OC(=O)NR'R", and -NR'C(=O)OR' where R' and R" are individually hydrogen, C_{1-8} alkyl, an aromatic group-containing species or a substituted aromatic group-containing species, wherein the substituent is G and the aromatic group containing species is phenyl, biphenyl, naphthyl, pyridinyl, pyrimidinyl, quinolinyl, or indolyl, and

q is an integer from 1 to 6,

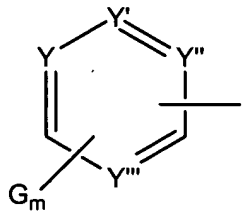
wherein heterocyclyl groups are selected from the group consisting of tetrahydrofuranyl, tetrahydropyranyl, tetrahydrothienyl, tetrahydrothiopyranyl, pyrrolidinyl, and piperidinyl, and

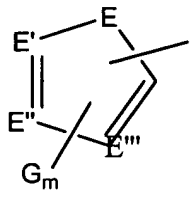
wherein substituted alkyl, substituted alkenyl, substituted non-aromatic heterocyclyl, substituted aryl, substituted heteroaryl, substituted alkylaryl, and substituted arylalkyl groups are

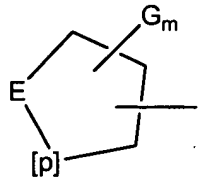
alkyl, alkenyl, non-aromatic heterocyclyl, aryl, heteroaryl, alkylaryl, and arylalkyl groups groups further bearing one or more substituent species G.

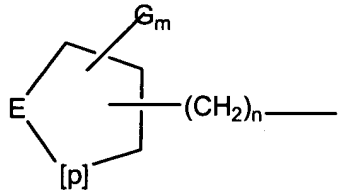
Claim 26. (Cancelled)

27. (Previously Presented) The pharmaceutical composition of Claim 22, wherein Cx is selected from the group consisting of









wherein Y, Y', Y" and Y''' are individually nitrogen, nitrogen bonded to oxygen, or carbon bonded to hydrogen or a substituent species, G; E is oxygen, sulfur or nitrogen bonded to hydrogen or a substituent species, G; E', E", and E''' are individually nitrogen or carbon bonded to hydrogen or a substituent species, G; m is 0, 1, 2, 3 or 4; p is 0, 1, 2 or 3; n is 0, 1, 2, 3 or 4; and

G is selected from the group consisting of alkyl, substituted alkyl, alkenyl, substituted alkenyl, non-aromatic heterocyclyl, substituted non-aromatic heterocyclyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkylaryl, substituted alkylaryl, arylalkyl, substituted arylalkyl,

-F, -Cl, -Br, -I, -OR', -NR'R", -CF_3, -CN, -N_3, -NO_2, -C_2-R', -SR', -SOR', -SO_2 CH_3, -SO_2 NR'R", -C(=O)NR'R", -NR'C(=O)R", -NR'SO_2R", -C(=O)R', -C(=O)OR', -(CH_2)qOR', -OC(=O)R', -$(CR'R")_qOCH_2C_2R'$, -(CR'R")qC(=O)R', -O$(CR'R")_qC(=O)R'$, -$C_2(CR'R")_qOR'$, -$(CR'R")_qNR'R"$, -OC(=O)NR'R", and -NR'C(=O)OR' where R' and R" are individually hydrogen, C_{1-8} alkyl, an aromatic group-containing species or a substituted aromatic group-containing species, wherein aromatic group-containing species and substituted aromatic group-containing species are as defined in claim 22.

28. (Previously Presented) The pharmaceutical composition of Claim 27, wherein Y, Y', Y" and Y'" all are carbon bonded to a substituent species G.

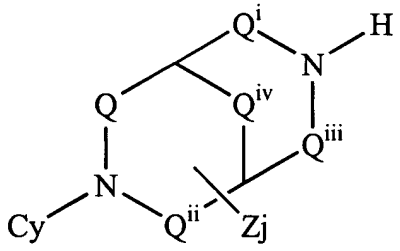
29. (Previously Presented) The pharmaceutical composition of Claim 27, wherein one or two of Y, Y', Y" and Y'" are nitrogen and the remaining are carbon bonded to a substituent species G.

30. (Previously Presented) The pharmaceutical composition of Claim 27, wherein E', E" and E'" all are carbon bonded to substituent species G.

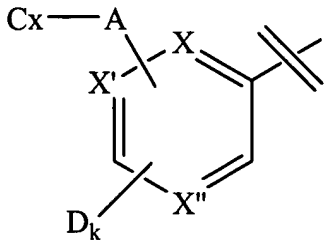
31. (Previously Presented) The pharmaceutical composition of Claim 27, wherein one or two of E', E" and E'" are nitrogen and the remaining are carbon bonded to substituent species G.

Claim 32. (Cancelled)

33. (Currently Amended) A pharmaceutical composition useful for treatment of central nervous system disorders comprising a therapeutically effective amount of a compound of the formula:



wherein Q is $(CH_2)_u$, Q^i is $(CH_2)_v$, Q^{ii} is $(CH_2)_w$, Q^{iii} is $(CH_2)_x$, and Q^{iv} is $(CH_2)_y$, where u, v, w and x are individually 0, 1, 2, 3 or 4 and y is 1 ; wherein u, v, w and x are selected such that the ring is a diazabicyclo[3.3.1]nonane; Z is a substituent species G; j is from 0 to 10; ~~R is hydrogen or C_{1-8} alkyl;~~ and Cy is



where each of X, X' and X" are individually nitrogen, nitrogen bonded to oxygen or carbon bonded to a substituent species G; A is a covalent bond; D is a substituent species G; k is 0, 1 or 2; Cx is selected from a group consisting of aryl, substituted aryl, heteroaryl, substituted heteroaryl, non-aromatic heterocyclyl, substituted non-aromatic heterocyclyl, non-aromatic heterocyclylalkyl and substituted non-aromatic heterocyclylalkyl;

G is selected from the group consisting of alkyl, substituted alkyl, alkenyl, substituted alkenyl, non-aromatic heterocyclyl, substituted non-aromatic heterocyclyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkylaryl, substituted alkylaryl, arylalkyl, substituted arylalkyl, -F, -Cl, -Br, -I, -OR', ~~-NR'R,~~ -NR'R", $-CF_3$, -CN, $-N_3$, $-NO_2$, $-C_2$-R', -SR', -SOR', $-SO_2CH_3$, ~~$-SO_2NR'R,$~~ $-SO_2NR'R"$, -C(=O)NR'R", ~~-NR'C(=O)R,~~ -NR'C(=O)R", ~~$-NR'SO_2R,$~~ $NR'SO_2R"$, -C(=O)R', -C(=O)OR', $-(CH_2)qOR'$, -OC(=O)R', ~~$-(CR'R)_qOCH_2C_2R',$~~ $-(CR'R")_qOCH_2C_2R'$, ~~$-(CR'R)qC(=O)R',$~~ -(CR'R")qC(=O)R', ~~$-O(CR'R)_qC(=O)R',$~~ $-O(CR'R")_qC(=O)R'$, $-C_2(CR'R")_qOR'$, ~~$-(CR'R)_qNR'R,$~~ $-(CR'R")_qNR'R"$, ~~$-OC(=O)NR'R,$~~ -OC(=O)NR'R", and -NR'C(=O)OR' where R' and R" are individually hydrogen, C_{1-8} alkyl, an aromatic group-containing species or a substituted aromatic group-containing species, wherein the substituent is G and the aromatic group containing species is phenyl, biphenyl, naphthyl, pyridinyl, pyrimidinyl, quinolinyl, or indolyl,

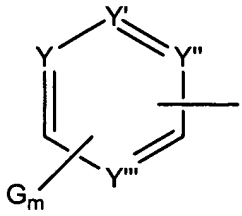
and q is an integer from 1 to 6,

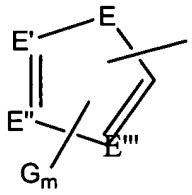
wherein heterocyclyl groups are selected from the group consisting of tetrahydrofuranyl, tetrahydropyranyl, tetrahydrothienyl, tetrahydrothiopyranyl, pyrrolidinyl, and piperidinyl, and

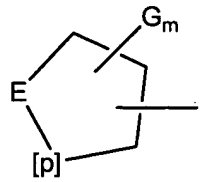
wherein substituted alkyl, substituted alkenyl, substituted non-aromatic heterocyclyl, substituted aryl, substituted heteroaryl, substituted alkylaryl, and substituted arylalkyl groups are alkyl, alkenyl, non-aromatic heterocyclyl, aryl, heteroaryl, alkylaryl, and arylalkyl groups groups further bearing one or more substituent species G.

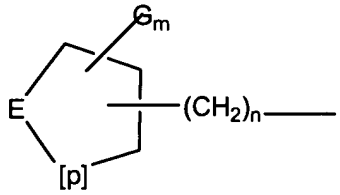
Claim 37. (Cancelled)

38. (Previously Presented) The pharmaceutical composition of Claim 33, wherein Cx is selected from the group consisting of









wherein Y, Y', Y" and Y''' are individually nitrogen, nitrogen bonded to oxygen, or carbon bonded to hydrogen or a substituent species, G; E is oxygen, sulfur or nitrogen bonded to hydrogen or a substituent species, G; E', E", and E''' are individually nitrogen or carbon bonded to hydrogen or a substituent species, G; m is 0, 1, 2, 3 or 4; p is 0, 1, 2 or 3; n is 0, 1, 2, 3 or 4; and

G is selected from the group consisting of alkyl, substituted alkyl, alkenyl, substituted alkenyl, non-aromatic heterocyclyl, substituted non-aromatic heterocyclyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, alkylaryl, substituted alkylaryl, arylalkyl, substituted arylalkyl, -F, -Cl, -Br, -I, -OR', -NR'R", -CF_3, -CN, -N_3, -NO_2, -C_2R', -SR', -SOR', -SO_2 CH_3, -SO_2 NR'R", -

C(=O)NR'R", -NR'C(=O)R", -NR'SO_2R", -C(=O)R', -C(=O)OR', -(CH_2)qOR', -OC(=O)R', -(CR'R")$_q$$OCH_2C_2$R', -(CR'R")qC(=O)R', -O(CR'R")$_q$C(=O)R', -C_2(CR'R")$_q$OR', -(CR'R")$_q$NR'R", -OC(=O)NR'R", and -NR'C(=O)OR' where R' and R" are individually hydrogen, C_{1-8} alkyl, an aromatic group-containing species or a substituted aromatic group-containing species, wherein aromatic group-containing species and substituted aromatic group-containing species are as defined in claim 33.

39. (Previously Presented) The pharmaceutical composition of Claim 38, wherein Y, Y', Y" and Y"' all are carbon bonded to a substituent species G.

40. (Previously Presented) The pharmaceutical composition of Claim 38, wherein one or two of Y, Y', Y" and Y"' are nitrogen and the remaining are carbon bonded to a substituent species G.

41. (Previously Presented) The pharmaceutical composition of Claim 38, wherein E', E" and E"' all are carbon bonded to substituent species G.

42. (Previously Presented) The pharmaceutical composition of Claim 38, wherein one or two of E', E" and E"' are nitrogen and the remaining are carbon bonded to substituent species G.

Claims 43-63 (Cancelled).